

REMARKS

No amendments are presented in this paper. As a result, claims 1-13 and 25 are presently pending for examination in this application.

Rejections Under 35 U.S.C. §§ 102/103

Claims 1-13 and 25 were rejected under 35 U.S.C. § 102(b) as being anticipated by, or, in the alternative, under 35 U.S.C. § 103(a), as being obvious over, U.S. Patent No. 5,209,852 to Sunaoka et al. (hereinafter "Sunaoka").

Sunaoka fails to disclose, teach or suggest a method for cleaning a membrane filtration module as recited in independent claim 1. Claim 1 recites, in part, steps of forming a gas-containing region on the first side of the permeable wall, sealing the feed-containing vessel, pressurizing a gas within the gas-containing region, and opening the feed-containing vessel to atmosphere, whereby the gas-containing region expands and produces a sweep of the feed-containing vessel to remove the liquid containing the dislodged contaminant.

As discussed in a previous response, Sunaoka discloses a two-stage process for membrane cleaning aimed at preventing outer surface roughening of the membranes. (See Sunaoka at col. 5, lines 27-31). A preliminary drain down with valve 21 opened to drain, facilitated by a water head or compressed air, may be carried out to discharge solids before second-stage scrubbing, or, alternatively, this draining may be effected simultaneously with the first-stage scrubbing or in the early course of the second-stage scrubbing. (See Sunaoka at col. 8, line 45 through col. 9, line 6; col. 10, lines 3-17). Sunaoka discloses that the drain rate can be adjusted with valve 21 and that it is "preferably adjusted such that the waste water in the lower compartment R is drained therefrom in a relatively short time." (See Sunaoka at col. 10, lines 28-35). Sunaoka fails, however, to disclose or suggest alternative methods for effecting a high velocity drain down to remove accumulated solids. More specifically, Sunaoka does not teach or suggest a method involving sealing the feed-containing vessel and pressurizing a gas within a gas-containing region as presently recited.

Sunaoka clearly states that valve 21 is opened to enable drainage, and that the draining step may make use of a water head or compressed air to effect quick draining of waste water. Sunaoka makes no inference or teaching that valve 21 is initially closed when compressed air is used to enhance drain down. Nor is there any inherent requirement for valve 21 to be closed if

compressed air is used. To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. (See *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999); MPEP at Section 2112). No such evidence has been presented to establish inherency. As disclosed by Sunaoka, the pressure of the compressed air simply facilitates the purging of waste water via open valve 21. In fact, it would have been counterintuitive to build pressure in a vessel housing delicate filtration membranes susceptible to damage, particularly considering Sunaoka's concerns with regard to membrane surface roughening by dispersed coarse particles. (See Sunaoka at col. 5, ll. 27-31). The present invention clearly differs from Sunaoka by developing a compressed air region with the tank sealed prior to drain down, generating both a blowout effect on the membrane pores and a high velocity sweep of the vessel for improved cleaning efficiency.

Because Sunaoka does not disclose, teach or suggest sealing the feed-containing vessel and pressurizing a gas within a gas-containing region, independent claim 1 is patentable over the teaching of Sunaoka. Claims 2-13 and 25 depend from claim 1 and are likewise patentable over the teaching of Sunaoka for at least the same reasons.

Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

Rejections Under 35 U.S.C. § 103

Claims 1-4, 9-13 and 25 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 6,159,373 to Beck et al. (hereinafter "Beck").

As discussed in a previous response, Beck discloses a method of removing retained species from a membrane module upon termination of a concentration cycle. Clarified liquid remaining in the membrane lumens is removed, and high pressure compressed gas is then introduced through inlet 18 and the lumens of the fibers 12. The still liquid-filled shell is sealed, and a reservoir of high pressure gas is accumulated in the fiber lumens because the liquid in the shell is relatively incompressible thus preventing gas from penetrating the porous walls. (See Beck at col. 5, lines 13-25). The shell outlet 17 is then opened, resulting in an explosive decompression of the pressurized gas through the fiber walls and causing dislodgment of

foulants. (See Beck at col. 5, lines 26-31). Beck does not disclose, teach or suggest pressurizing a gas in a gas-containing region on the feed-side of the permeable wall as presently recited.

Beck creates a compressed gas containing region within the lumen rather than on the feed-side of the membrane wall. Because the feed side of the tank is full of incompressible liquid and the lumen of the membrane is pressurized with gas, gas will not move through the membrane pores until the feed side is opened. Providing larger diameter inlet ports 16, 18 would not make the disclosed process steps an obvious equivalent. Unlike the Beck process, the present invention offers the benefit that the liquid need not be removed from the lumens during drain down, resulting in avoiding having to re-wet the membranes when recommencing filtration.

Because Beck does not disclose, teach or suggest pressurizing a gas in a gas-containing region on the feed-side of the permeable wall, independent claim 1 is patentable over the teaching of Beck. Claims 2-4, 9-13 and 25 depend from claim 1 and are likewise patentable for at least the same reasons.

Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, reconsideration is respectfully requested. This application should now be in condition for allowance; a notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is invited to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50/2762.

Respectfully submitted,
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